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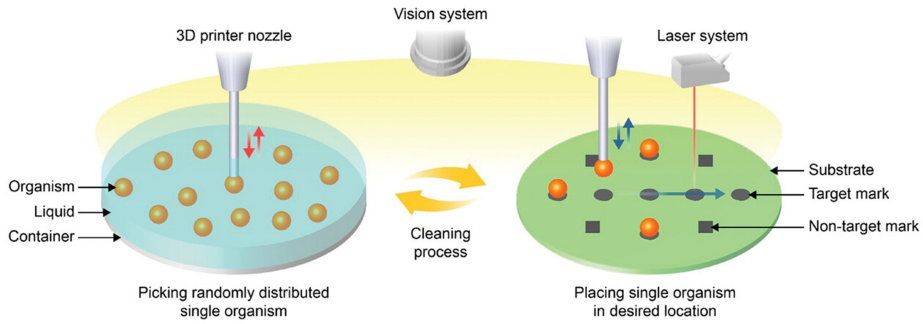
3D printing of organisms

A 3D printing system with multiple nozzles to automatically pick-and-place single and multiple living organisms in desired 3D locations.



IP Status: US Patent Pending; Application No. US 2023-0025400 A1

Applications

- Cryopreservation
- Bioimaging
- Tissue engineering
- Organism-integrated devices
- Distributed information gathering

Technology Overview

The ability to manipulate and position organisms without compromising their integrity is essential for a variety of fields including cryopreservation, creating cybernetic organisms and bioimaging. Researchers at the University of Minnesota have developed the first system with adaptive methodologies that can manage complex tasks, including real-time organism tracking and target space identification, with the objective of placing organisms via an automated system. These methods could replace the manual handling of organisms, reducing inconsistencies and contamination risks, while increasing the throughput.

Phase of Development

TRL: 3-4

The 3D printing technology has been demonstrated for high throughput cryopreservation of zebrafish and shrimp, sorting of live zebrafish embryos, and fabrication of spherical and planar displays via the printing of dinoflagellates

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Technology ID

2022-015

Category

All Technologies
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Engineering & Physical Sciences/Robotics
Life Sciences/Biomaterials
Cryopreservation

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Press Releases

Phys.org 08/20/2024

Researchers

- **Michael McAlpine, PhD** Professor, Mechanical Engineering
- **John Bischof, PhD** Professor, Mechanical Engineering

References

1. Guebum Han, Kanav Khosla, Kieran T. Smith, Daniel Wai Hou Ng, JiYong Lee, Xia Ouyang, John C. Bischof, Michael C. McAlpine(June 2024) , https://onlinelibrary.wiley.com/doi/10.1002/advs.202404617, Advanced Science, 11, 2404617